

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A semiconductor device comprising:

a high-breakdown-voltage regulator configured to operate at a high input voltage to produce a regulated output voltage that is lower than the high input voltage, said high-breakdown-voltage regulator comprising resistors connected in series to divide a voltage output from a transistor connected to the high input voltage ~~a power supply line~~, said transistor having a gate connected to an output of a first differential amplifier circuit configured to receive a first input generated from said high input voltage by a first reference voltage generating circuit and a second input as a feedback voltage divided by said resistors, said first differential amplifier being driven by said high input voltage;

a low-breakdown-voltage regulator comprising a second reference voltage generating circuit configured to receive the regulated output voltage from the high-breakdown-voltage regulator to generate a second reference voltage and a second differential amplifier circuit configured to receive the second reference voltage from the second reference voltage generating circuit to produce a drive voltage;

an output driver structured as a high-breakdown-voltage component and configured to operate based on the drive voltage, wherein the output driver is a MOS transistor; and

resistors connected in series to the output driver to divide an output voltage of the output driver and feed the divided voltage back to the second differential amplifier circuit.

2. (Previously Presented) The semiconductor device of claim 1, wherein the high-breakdown-voltage output driver is a MOS transistor with a gate oxide film having a first thickness.

3. (Previously Presented) The semiconductor device of claim 2, wherein the high-breakdown-voltage regulator comprises a high-breakdown-voltage MOS transistor with a gate oxide film having a second thickness greater than the first thickness.

4. (Previously Presented) The semiconductor device of claim 1, wherein the output driver is a P-channel MOS transistor, the semiconductor device further comprising a diode inserted between the gate and the source of the P-channel MOS transistor having a reverse breakdown voltage lower than an oxide breakdown voltage of the P-channel MOS transistor.

5. (Previously Presented) The semiconductor device of claim 1, wherein the output driver is an N-channel MOS transistor, the semiconductor device further comprising a diode inserted between the gate and the source of the N-channel MOS transistor or between the gate and the ground and having a reverse breakdown voltage lower than an oxide breakdown voltage of the N-channel MOS transistor.

6. (Previously Presented) The semiconductor device of claim 1, wherein the output driver is a P-channel MOS transistor, the semiconductor device further comprising a constant current inverter inserted between the differential amplifier circuit and the output driver, the constant current inverter comprising:

- a constant current circuit connected between a power supply line and the output driver; and
- a MOS transistor controlled by the drive voltage output from the differential amplifier circuit.

7. (Previously Presented) The semiconductor device of claim 1, wherein the output driver is a P-channel MOS transistor, the semiconductor device further comprising a constant current inverter inserted between a power supply line and the output driver, the constant current inverter comprising:

- a first N-channel MOS transistor to which the reference voltage generated by the first reference voltage generating circuit is supplied;

- a first P-channel MOS transistor connected in series to the first N-channel MOS transistor to produce a constant current;

- a second P-channel MOS transistor defining a constant current circuit under a current mirror configuration; and

- a second N-channel MOS transistor to which the drive voltage output from the second differential amplifier circuit is supplied.

8. (Currently Amended) A semiconductor device comprising:

a first reference voltage generating circuit configured to generate a first reference voltage from a high input voltage, said first reference voltage being lower than the high input voltage;

a second reference voltage generating circuit configured to generate a second reference voltage, said second reference voltage generating circuit comprising resistors connected in series to divide a voltage output from a transistor connected to the high input voltage ~~a power supply line~~, said transistor having a gate connected to an output of a first differential amplifier circuit receiving a first input from said first reference voltage generating circuit and a second input as a feedback voltage divided by said resistors, said first differential amplifier being driven by said high input voltage;

a second differential amplifier circuit configured to receive the second reference voltage and generate a drive voltage;

an output driver configured to operate based on the drive voltage, wherein the output driver is a MOS transistor;

a diode inserted between a gate and a source of the MOS transistor, the diode having a reverse breakdown voltage lower than an oxide breakdown voltage of the MOS transistor;

resistors connected in series to the output driver to divide an output voltage of the output driver and feed the divided voltage back to the second differential amplifier circuit; and

a constant current circuit inserted between a power supply-line and a combination of the reference voltage generating circuit and the second differential amplifier circuit.

9. (Original) The semiconductor device of claim 8, wherein the constant current circuit is structure by a depression-mode N-channel or P-channel MOS transistor.

10. (Original) The semiconductor device of claim 8, wherein the constant current circuit is structured by an enhancement-mode N-channel or P-channel MOS transistor.

11. (Previously Presented) The semiconductor device of claim 8, wherein the constant current circuit includes multiple MOS transistors connected in series to form a multi-stage constant current circuit.

12. (Previously Presented) The semiconductor device of claim 2, wherein the low-breakdown voltage regulator comprises a MOS transistor having a gate oxide film of the first thickness.